

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Hiroyuki KADOTA

Serial No.:

Filed: November 21, 2001

Title: ELECTROLYTIC GOLD PLATING METHOD AND APPARATUS  
THEREFOR

PRELIMINARY AMENDMENT

Box Non-Fee Amendment  
Commissioner for Patents  
Washington, D.C. 20231

Sir:

Please enter the following amendments to the claims prior to the examination of the application.

IN THE CLAIMS:

Please amend claims 12-13 and 15-16 as follows:

12. (Amended) An electrolytic gold plating apparatus according to Claim 9 or 10, wherein said means for measuring said sulfurous acid in said complex or sulfuric acid is an automatic titrator or a liquid chromatograph.

13. (Amended) An electrolytic gold plating apparatus according to Claim 9 or 10, which comprises a monitoring unit for displaying a value measured by at least one of said means for measuring a light intensity, said means for measuring said pH, said means for measuring sulfurous acid and said means for measuring sulfuric acid.

15. (Amended) An electrolytic gold plating apparatus according to Claims 8 to 10 and 14, which comprises:

an automatic adding solution supply unit for adding said plating solution based on a value obtained by measuring at least one of an amount of gold colloid of said plating solution, a value of pH of said plating solution, a concentration of sulfurous acid in gold sulfite complex of said plating solution and a concentration of sulfuric acid of said plating solution;

an automatic pH adjustment unit for adjusting pH; and

an automatic water supply unit for supplying water for evaporated water.

16. (Amended) An electrolytic gold plating apparatus according to Claims 8 to 10 and 14, which comprises:

an anode, an object to be plated and an opening portion in a plating bath, said anode being vertically arranged, said object to be plated being arranged opposite to said anode, said opening portion being arranged at a side surface portion of said plating bath;

a substrate stage for vacuum-holding said object to be plated, said substrate stage detachably attached to said plating bath in a state of blocking said opening portion; and

a pushing unit for pushing and releasing said substrate stage to and from said opening portion.

REMARKS

Entry of the amendments to the claims before examination of the application is respectfully requested.

If there are any questions regarding this Preliminary Amendment or this application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

It is respectfully requested that, if necessary to effect a timely response, this paper be considered as a Petition for an Extension of Time sufficient to effect a timely response and shortages in other fees, be charged, or any overpayment in fees be credited, to the Account of Evenson, McKeown, Edwards & Lenahan, P.L.L.C., Deposit Account No. 05-1323 (Docket #381NP/50670).

Respectfully submitted,

November 21, 2001



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

Please amend claims 12-13 and 15-16 as follows:

12. (Amended) An electrolytic gold plating apparatus according to [any one of claims 9 to 11] Claim 9 or 10, wherein said means for measuring said sulfurous acid in said complex or sulfuric acid is an automatic titrator or a liquid chromatograph.

13. (Amended) An electrolytic gold plating apparatus according to [any one of claims 9 to 12] Claim 9 or 10, which comprises a monitoring unit for displaying a value measured by at least one of said means for measuring a light intensity, said means for measuring said pH, said means for measuring sulfurous acid and said means for measuring sulfuric acid.

15. (Amended) An electrolytic gold plating apparatus according to [any one of claims 8 to 14] Claims 8 to 10 and 14, which comprises:

an automatic adding solution supply unit for adding said plating solution based on a value obtained by measuring at least one of an amount of gold colloid of said plating solution, a value of pH of said plating solution, a concentration of sulfurous acid in gold sulfite complex of said plating solution and a concentration of sulfuric acid of said plating solution;

an automatic pH adjustment unit for adjusting pH; and  
an automatic water supply unit for supplying water for evaporated water.

16. (Amended) An electrolytic gold plating apparatus according to [any one of claims 8 to 15] Claims 8 to 10 and 14, which comprises:

an anode, an object to be plated and an opening portion in a plating bath, said anode being vertically arranged, said object to be plated being arranged opposite to said anode, said opening portion being arranged at a side surface portion of said plating bath;

a substrate stage for vacuum-holding said object to be plated, said substrate stage detachably attached to said plating bath in a state of blocking said opening portion;  
and

a pushing unit for pushing and releasing said substrate stage to and from said opening portion.